

BRC Bachelor of Engineering (Computer Engineering) Curriculum*Applicable to students matriculated in 2015***Polytechnic Exemptions**

32 AUs of exemptions and they are:

- a. Technical Elective I (Core elective, to be taken from CZ2xxx or CZ3xxx courses) - 3 AUs
- b. Technical Elective 2 (Core elective, to be taken from CE4xxx or CE4xxx) – 3 AUs
- c. CE1003 Introduction to Computational Thinking[#] (Core) - 3 AUs
- d. CE1004 Inventions and Innovations in Computing (Core) - 2 AUs
- e. GER Electives (BM, LA) - 6 AUs
- f. Unrestricted Electives - 15 AUs

- g. Additional 3 AUs in Technical Elective 3 (Core elective, to be taken from CE4xxx or CZ4xxx) or other relevant courses on a case-by-case basis subject to the students having participated and done well in NTU research or other projects, or with additional Certificate in Mathematics from Diploma-Plus programmes, or having taken and done well in university level courses.

[#] Not applicable to:

- Diploma in Aerospace Engineering from Temasek Polytechnic
- Diploma in Aerospace Electronics from Temasek Polytechnic
- Diploma in Engineering with Business from Singapore Polytechnic

3-year BEng (CE) Programme with Professional Internship (PI) for Exempted Polytechnic Students

Applicable to students matriculated in 2015

Option I: 3-year Programme with Professional Internship

It is suggested that students do their PI in Year 3 Semester 2 (i.e. after FYP). Students will need to heavily overload to complete the programme within 3 years.

AU requirements

Type	Total No. of AUs
Depth (Core)	100
Breadth	21
Unrestricted electives	15
Grand Total	136

Suggested Curriculum

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
EXEMPTIONS							
CE1003 Introduction to Computational Thinking [#]	Core	2	1	1	4	3	-
Technical Elective (CZ200x or CZ300x)	Core elective	2	1	1	4	3	
CE4xxx Technical Elective	Core elective	2	1	1	4	3	
CE1004 Inventions and Innovations in Computing	Core	1	1	1 ⁺	3	2	-
General elective	GER elective	2	1	-	3	3	Business & Management
General elective	GER elective	2	1	-	3	3	Liberal Arts
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
TOTAL		21	11	3+1 ⁺	36	32	

[#]Not applicable to Diploma in Aerospace Engineering and Diploma in Aerospace Electronics from Temasek Polytechnic

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
YEAR 1 SEMESTER 1							
CE1011 Engineering Mathematics I	Core	2	1	1 ⁺	4	3	-
CE1012 Engineering Mathematics II	Core	2	1	1 ⁺	4	3	CE1011 (can be taken concurrently)
CE1005 Digital Logic	Core	2	1	1	4	3	-
CE1007 Data Structures	Core	2	1	1	4	3	CE1003
CE0001 Engineers and Society	GER core	2	1	-	3	3	-
Science & Technology	GER elective	2	1	1	4	3	
HW0188^ Engineering Communication I	GER core	-	2	-	2	2	HW0001 (can be taken concurrently)
GC0001 Introduction to Sustainability: Multidisciplinary Approaches and Solutions	GER core					1	online course
HW0001 English Proficiency	GER core					0	
TOTAL		12	8	3+2 ⁺	25	21	
CE1003 Introduction to Computational Thinking ^{##}	Core	2	1	1	4	3	-
YEAR 1 SEMESTER 2							
MH1812 Discrete Mathematics	Core	2	1	1 ⁺	4	3	-
CE1006 Computer Organisation and Architecture	Core	2	1	1	4	3	CE1005 (can be taken concurrently)
CE2002 Object Oriented Design & Programming	Core	2	1	1	4	3	CE1007
CE2003 Digital Systems Design	Core	2	1	1	4	3	CE1005
CE2004 Circuits and Signal Analysis	Core	2	1	1	4	3	CE1012
CE3005 Computer Networks	Core	2	1	1	4	3	CE1011, CE1012
ML0001 Absolute Basics for Career by MLCPS (Margaret Lien Centre for Professional Success)	GER core					1	online course
TOTAL		12	6	5+1 ⁺	24	19	

[^] Should there be insufficient vacancies, students will take Eng Comm I & II in the following semester.

^{##} Only applicable to Diploma in Aerospace Engineering and Diploma in Aerospace Electronics from Temasek Polytechnic

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
YEAR 2 SEMESTER 1							
CE2001 Algorithms	Core	2	1	1 ⁺	4	3	CE1007, CE1012, MH1812
CE2005 Operating Systems	Core	2	1	1	4	3	CE1006, CE1007
CE2006 Software Engineering	Core	2	1	1	4	3	CE2002 (can be taken concurrently)
CE2007 Microprocessor-based Systems Design	Core	2	1	1	4	3	CE1006, CE2004 (can be taken concurrently)
CE3001 Advanced Computer Architecture	Core	2	1	11	4	3	CE1006
CE3002 Sensors, Interfacing and Control	Core	2	1	1	4	3	CE2004
HY0001 Ethics & Moral Reasoning	GER core					1	online course
TOTAL		12	6	5+1 ⁺	24	19	
YEAR 2 SEMESTER 2							
CE4079 Final Year Project	Core	-	-	-	-	-	
CE3003 Microcontroller Programming	Core	2	1	1	4	3	CE2005
CE3004 Multidisciplinary Design Project	Core	1	-	3	4	4	Year 3 standing
CE4xxx Technical Elective 1	Core elective	2	1	1	4	3	
CE4xxx Technical Elective 2	Core elective	2	1	1	4	3	
HW0288^ Engineering Communication II	GER core	-	2	-	2	2	HW0188, Year 3 standing
TOTAL		7	5	6	18	15	

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
YEAR 3 SEMESTER 1							
CE4079 Final Year Project	Core	-	-	-	-	8	
CE3006 Digital Communications	Core	2	1	1	4	3	CE1011, CE2004
CE3007 Digital Signal Processing	Core	2	1	1	4	3	CE2004
CE4xxx Technical Elective 3	Core elective	2	1	1	4	3	
CE4xxx Technical Elective 4	Core elective	2	1	1	4	3	
ET0001 Enterprise & Innovation	GER core					1	online course
TOTAL		8	4	4	16	21	
YEAR 3 SEMESTER 2							
ML0002 Career Power Up! by MLCPS	GER core					1	online course (to be taken with PI)
CE3079 Professional Internship	Core	-	-	-	-	8	Year 3 standing Important Note: Students will be awarded the degrees upon successful completion of PI. However, if the PI is delayed/exte nded and/or the marks submission to CAO is delayed, students will not be in time to attend the Convocation in July and have to attend the Convocation in the

							following year. Students can opt to do PI in Year 2 Sem 2.
TOTAL		-	-	-	-	9	
GRAND TOTAL (Years 1 to 3)							136

* An additional 10 hours per semester have been allocated for these non-lab based courses for Example Classes. Faculty can use these time slots for their pedagogical needs such as to reinforce concepts, provide additional coaching, give more worked examples, allow students to do practice exercises or do research or work on the computers etc.

3.5-year BEng (CE) Programme with Professional Internship (PI) for Exempted Polytechnic Students

Applicable to students matriculated in 2015

Option II: 3.5-year Programme with Professional Internship

Students may do their PI in Year 3 Semester 1 (i.e. before FYP) if they so wish or Year 4 Semester 1 (i.e. after FYP) and students will need to overload to complete the programme within 3.5 years.

AU requirements

Type	Total No. of AUs
Depth (Core)	100
Breadth	21
Unrestricted electives	15
Grand Total	136

Suggested Curriculum

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
EXEMPTIONS							
CE1003 Introduction to Computational Thinking [#]	Core	2	1	1	4	3	-
Technical Elective (CZ200x or CZ300x)	Core elective	2	1	1	4	3	
CE4xxx Technical Elective	Core elective	2	1	1	4	3	
CE1004 Inventions and Innovations in Computing	Core	1	1	1 ⁺	3	2	-
General elective	GER elective	2	1	-	3	3	Business & Management
General elective	GER elective	2	1	-	3	3	Liberal Arts
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
Unrestricted elective	Unrestricted elective	2	1	-	3	3	
TOTAL		21	11	3+1 ⁺	36	32	

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
YEAR 1 SEMESTER 1							
CE1011 Engineering Mathematics I	Core	2	1	1 ⁺	4	3	-
CE1012 Engineering Mathematics II	Core	2	1	1 ⁺	4	3	CE1011 (can be taken concurrently)
CE1005 Digital Logic	Core	2	1	1	4	3	-
CE1007 Data Structures	Core	2	1	1	4	3	CE1003
CE0001 Engineers and Society	GER core	2	1	-	3	3	-
HW0188^ Engineering Communication I	GER core	-	2	-	2	2	HW0001 (can be taken concurrently)
GC0001 Introduction to Sustainability: Multidisciplinary Approaches and Solutions	GER core					1	online course
HW0001 English Proficiency	GER core					0	
TOTAL		10	7	2+2 ⁺	21	18	
CE1003 Introduction to Computational Thinking ^{##}	Core	2	1	1	4	3	-
YEAR 1 SEMESTER 2							
MH1812 Discrete Mathematics	Core	2	1	1 ⁺	4	3	-
CE1006 Computer Organisation and Architecture	Core	2	1	1	4	3	CE1005 (can be taken concurrently)
CE2002 Object Oriented Design & Programming	Core	2	1	1	4	3	CE1007
CE2003 Digital Systems Design	Core	2	1	1	4	3	CE1005
Science & Technology	GER elective	2	1	1	4	3	
ML0001 Absolute Basics for Career by MLCPS (Margaret Lien Centre for Professional Success)	GER core					1	online course
TOTAL		10	5	4+1 ⁺	20	16	

[^] Should there be insufficient vacancies, students will take Eng Comm I & II in the following semester.

^{##} Only applicable to Diploma in Aerospace Engineering and Diploma in Aerospace Electronics from Temasek Polytechnic

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
YEAR 2 SEMESTER 1							
CE2001 Algorithms	Core	2	1	1 ⁺	4	3	CE1007, CE1012, MH1812
CE2004 Circuits and Signal Analysis	Core	2	1	1	4	3	CE1012
CE2005 Operating Systems	Core	2	1	1	4	3	CE1006, CE1007
CE2006 Software Engineering	Core	2	1	1	4	3	CE2002 (can be taken concurrently)
CE3005 Computer Networks	Core	2	1	1	4	3	CE1011, CE1012
HY0001 Ethics & Moral Reasoning	GER core					1	online course
TOTAL		10	5	4+1 ⁺	20	16	
YEAR 2 SEMESTER 2							
CE2007 Microprocessor-based Systems Design	Core	2	1	1	4	3	CE1006, CE2004 (can be taken concurrently)
CE3001 Advanced Computer Architecture	Core	2	1	1	4	3	CE1006
CE3002 Sensors, Interfacing and Control	Core	2	1	1	4	3	CE2004
CE3003 Microcontroller Programming	Core	2	1	1	4	3	CE2005
CE3006 Digital Communications	Core	2	1	1	4	3	CE1011, CE2004
TOTAL		10	5	5	20	15	

Course Code and Title	Type (i.e. Core/ Core elective/ GER core/ GER elective/ Unrestricted elective)	No of Hours Per Week				AU	Pre-requisite / Remarks
		Lec	Tut	Lab	Total		
YEAR 3 SEMESTER 1							
CE4079 Final Year Project	Core	-	-	-	-	-	
CE3004 Multidisciplinary Design Project	Core	1	-	3	4	4	Year 3 standing
CE4xxx Technical Elective 1	Core elective	2	1	1	4	3	
CE4xxx Technical Elective 2	Core elective	2	1	1	4	3	
HW0288^ Engineering Communication II	GER core	-	2	-	2	2	HW0188, Year 3 standing
ET0001 Enterprise & Innovation	GER core					1	online course
TOTAL		5	4	4	14	13	
YEAR 3 SEMESTER 2							
CE4079 Final Year Project	Core	-	-	-	-	8	
CE3007 Digital Signal Processing	Core	2	1	1	4	3	CE2004
CE4xxx Technical Elective 3	Core elective	2	1	1	4	3	
CE4xxx Technical Elective 4	Core elective	2	1	1	4	3	
TOTAL		6	3	3	12	17	
YEAR 4 SEMESTER 1							
ML0002 Career Power Up! by MLCPS	GER core					1	online course (to be taken with PI)
CE3079 Professional Internship	Core	-	-	-	-	8	Year 3 standing Students can opt to do PI in Year 3 Sem 1
TOTAL		-	-	-	-	9	
GRAND TOTAL (Years 1 to 3.5)							136

* An additional 10 hours per semester have been allocated for these non-lab based courses for Example Classes. Faculty can use these time slots for their pedagogical needs such as to reinforce concepts, provide additional coaching, give more worked examples, allow students to do practice exercises or do research or work on the computers etc.